Smiths Medical ASD Inc div Smiths Group PIC

New Hampshire Manufacturing Extension Partnership

Cellular Layout was a Real Shot in the Arm for Smiths Medical

Client Profile:
Smiths Medical ASD Inc. sells and distributes medical devices and procedural kits for use in critical and intensive care applications, recovery rooms and specialized home therapies. At their facility in Keene, New Hampshire, they take the individual components, such as tubing, needles, syringes, medications, etc.,needed during a procedure, and package them as one sterile, sealed kit. Smiths Medical employs 400 people.

Situation:
Smiths recently acquired a large Fixed Needle Hypodermic Machine that would be located in the space occupied by the Pain Management Conveyor system. The company needed to relocate Pain Management, reduce the department footprint by 62 percent, and also meet the increased demand for smaller batch sizes and a more diverse product mix. An additional challenge included increasing the number of kits produced per day from 6,800 to 10,700 (a 57 percent increase) without utilizing overtime. Smiths needed to maintain quality and reduce costs to ensure the integrity of line clearance and bill of material procedures. The company contacted the New Hampshire Manufacturing Extension Partnership (NHMEP), a NIST MEP network affiliate, for help.

Solution:
NHMEP project manager Linda Ellis brought in Glenn Gertridge, a colleague from the Massachusetts Manufacturing Extension Partnership (Mass MEP), a NIST MEP network affiliate, to look at the plant layout situation. It was determined that Smiths Medical would benefit from Lean training to augment the plant layout. A team was created with employees from first and second shifts of Pain Management and representatives from other departments. They received some basic Lean training (Time Wise Le101) to familiarize them with Lean methodologies and tools and then they learned how to use Value Stream Mapping (VSM) to diagram their current state and determine what improvements were needed in order to reach their goals. It was decided to put Pain Management next to the drug room. Gertridge worked with the team on plant layout, NHMEP project manager, Dave Hess, worked with them on Cell Design, and Ellis did Set-Up Reduction training. They determined that replacing the conveyor system with a cellular layout would allow them to move to the substantially smaller space. The group spent a week with NHMEP fine tuning how many cells they would need, how they would be configured, and how many people per cell. In going from one system to the other, the process flow did not change. The wrapping and sealing processes were not touched, but assembly changes were according to the materials that make up the kits. The cells were designed using the takt time of the longest process, which is wrapping. Using tables and benches the team created four cells so employees could get used to working in the new configuration and fine tune the process before the actual move. The idea of using one-piece flow to feed the line in Pain Management came about during a set-up reduction activity. When time came for relocation, Gertridge and NHMEP were pleasantly surprised that the layout for the department was used exactly as it had been created by the team! Within a month they

were building to one piece flow using the u-shaped work cells with positive results.
Now that the Pain Management is located next to the drug room, a "staging area" has been constructed where they pull orders and materials for the kits onto wheeled racks which are moved to the cells when visual kanbans indicate the need. Three computer workstations show visual bills of material with photos for each order. Materials are pulled according to photos and a second copy travels with the work order to the work cells for quality control. Having the staging area located between the drug room and Pain Management allows materials and drugs to be filtered into the line simultaneously and more efficiently.

Results:
* Reduced set-up reduction time from 45 minutes to 30 minutes.
* Increased output from 34,000 trays to 61,875 trays per week.
* Increased output by 82 percent per shift.
* Increased units per labor hour from 7.2 to 14.4.
* Increased changeovers per day from 15 to 40.
* Reduced floor space by 62 percent, from 4800 square feet to 1800 square feet.

Testimonial:
"All the folks at New Hampshire Manufacturing Extension Partnership have been wonderful and a pleasure to deal with. Along with the great results, I have noticed the subtleties: absenteeism has dropped to nearly nothing; people are smiling, they like coming to work, and they like their environment. If they have any work-related concerns they are empowered to change them."
Rick Demeco, Team B Production Manager